What is claimed is:

1. A sensor unit for sensing process parameters of a process to manufacture an integrated circuit using integrated circuit processing equipment, the sensor unit comprising:

a substrate having a wafer-shaped profile;

a first sensor, disposed on or in the substrate, to sample a first process parameter; and

a second sensor, disposed on or in the substrate, to sample a second process parameter wherein the second process parameter is different from the first process parameter.

2. The sensor unit of claim 1 further including at least one battery, disposed in the wafer-shaped substrate, to provide electrical power to the first sensor.

3. The sensor unit of claim 1 further including communications circuitry disposed on the substrate, wherein the communications circuitry is coupled to the first and second sensors to provide data to an external device wherein the data is representative of the first and second process parameters.

4. The sensor unit of claim 1 further including a first source, disposed on or in the substrate, wherein first source generates an interrogation signal and wherein the first sensor uses the interrogation signal from the first source to sample the first process parameter.

5. The sensor unit of claim 4 further including a second source, disposed on or in the substrate, wherein second source generates an interrogation signal and wherein the second sensor uses the interrogation signal from the second source to sample the second process parameter.

6. The sensor unit of claim 4 wherein the first sensor and first source operate in an end-point mode.

7. The sensor unit of claim 6 wherein the second sensor operates in a real-time mode.

8. The sensor unit of claim 7 further including data storage to store data which is representative of the second parameter.

9. The sensor unit of claim 7 wherein the sensor unit further includes:

data compression circuitry to compress the data which is representative of the second parameter;

communication circuitry, coupled to the data compression circuitry, to provide the data which is representative of the second parameter to external circuitry; and

at least one rechargeable battery, to provide electrical power to the data compression circuitry and the communication circuitry.

10. The sensor unit of claim 1 wherein the first sensor operates in a real-time mode.

11. The sensor unit of claim 10 further including:

data storage to store data which is representative of the first parameter;

data compression circuitry to compress the data which is representative of the first parameter;

communication circuitry, coupled to the data compression circuitry, to provide the data which is representative of the first parameter to external circuitry; and

at least one rechargeable battery, to provide electrical power to the data compression circuitry and the communication circuitry.

12. The sensor unit of claim 10 wherein the first sensor samples the first parameter periodically or continuously while the sensor unit is disposed in the integrated circuit processing equipment and undergoing processing.

13. The sensor unit of claim 1 wherein the first sensor is a temperature sensor and the second sensor is a pressure sensor.

14. The sensor unit of claim 1 wherein the first sensor is a temperature sensor and the second sensor is a chemical sensor.

15. The sensor unit of claim 1 wherein the first sensor is a temperature sensor and the second sensor is a surface tension sensor.

16. The sensor unit of claim 1 wherein the first sensor is a temperature sensor and the second sensor is a surface stress sensor.

17. A sensor unit for sensing a first process parameter of a process to manufacture an integrated circuit using integrated circuit processing equipment, the sensor unit comprising:

a substrate having a wafer-shaped profile;

a source, disposed on or in the substrate, to generate an interrogation signal; and

a first sensor, disposed on or in the substrate, to sample a first process parameter using the interrogation signal from the source.

18. The sensor unit of claim 17 wherein the source and the first sensor operate in an end-point mode.

19. The sensor unit of claim 17 wherein the source and the first sensor operate in a real-time mode.

20. The sensor unit of claim 19 further including data storage to store data which is representative of the first parameter.

21. The sensor unit of claim 19 wherein the sensor unit further includes:

data compression circuitry to compress the data which is representative of the first parameter;

communication circuitry, coupled to the data compression circuitry, to provide the data which is representative of the first parameter to external circuitry; and

at least one rechargeable battery, to provide electrical power to the data compression circuitry and the communication circuitry.

22. The sensor unit of claim 17 wherein the source is a VCSEL or LED.

23. The sensor unit of claim 22 wherein the first sensor is a CMOS devices, charge coupled devices, or photodiode.

24. The sensor unit of claim 23 wherein the first parameter is the surface profile.

25. The sensor unit of claim 23 wherein the sensor unit further includes a predetermined surface layer which is disposed above the source and the first sensor.

26. The sensor unit of claim 25 wherein the predetermined surface layer is comprised of a material that facilitates light propagation or scattering.

27. The sensor unit of claim 17 wherein the first sensor periodically or continuously samples the first parameter while the sensor unit is disposed in the integrated circuit processing equipment and undergoing processing.

28. The sensor unit of claim 27 further including data storage, coupled to the first sensor, to store data which is representative of the first parameter.

29. The sensor unit of claim 27 wherein the sensor unit further includes:

communication circuitry, coupled to the data compression circuitry, to provide the data which is representative of the first parameter to external circuitry; and

at least one rechargeable battery, to provide electrical power to the data compression circuitry and the communication circuitry.

30. The sensor unit of claim 29 wherein:

the source is a VCSEL or LED;

the first sensor is a CMOS devices, charge coupled devices, or photodiode; and

wherein the sensor unit further includes a predetermined surface layer which is disposed above the source and the first sensor.

31. The sensor unit of claim 30 wherein the first sensor samples the intensity of reflected or scattered light.

32. The sensor unit of claim 31 further including a temperature sensor to sample temperature, in a real-time mode, while the sensor unit is disposed in the integrated circuit processing equipment and undergoing processing.

33. The sensor unit of claim 32 wherein the temperature sensor periodically or continuously samples the temperature.

34. A sensor unit for sensing a first process parameter of a process to manufacture an integrated circuit using integrated circuit processing equipment, the sensor unit comprising:

a substrate having a wafer-shaped profile;

a first source, disposed on or in the substrate, to generate an interrogation signal; and

a first sensor array including a plurality of first sensors disposed on or in the substrate, wherein the first sensors sample a first process parameter using the interrogation signal;

a second sensor array including a plurality of second sensors disposed on or in the substrate, wherein the second sensors sample a second process parameter wherein the second process parameter is different from the first process parameter.

35. The sensor unit of claim 34 wherein the second sensors operate in a end-point mode.

36. The sensor unit of claim 34 wherein the second sensors operate in a real-time mode and sample the second process parameter continuously or periodically while the sensor unit is disposed in the integrated circuit processing equipment and undergoing processing.

37. The sensor unit of claim 34 wherein the first source and the first sensors operate in an end-point mode.

38. The sensor unit of claim 34 wherein the first source and the first sensors operate in a real-time mode.

39. The sensor unit of claim 38 further including:

data storage to store data sampled by the first sensors;

communication circuitry, coupled to the data storage, to provide the data which is representative of the first parameter to external circuitry; and

at least one rechargeable battery, to provide electrical power to the first source, the first sensors, the data storage and the communication circuitry.

40. The sensor unit of claim 38 wherein:

the first source is a VCSEL or LED;

the first sensor is a CMOS devices, charge coupled devices, or photodiode; and

wherein the sensor unit further includes a predetermined surface layer which is disposed above the first source and the first sensor.

41. The sensor unit of claim 40 wherein the first sensor samples the intensity of reflected or scattered light.

42. The sensor unit of claim 41 wherein the second sensors are temperature sensors.

43. The sensor unit of claim 42 wherein the temperature sensors sample temperature, in a real-time mode, while the sensor unit is disposed in the integrated circuit processing equipment and undergoing processing.

44. The sensor unit of claim 43 wherein the temperature sensors periodically or continuously sample the temperature.

45. The sensor unit of claim 34 wherein the second sensors are pressure sensors.

46. The sensor unit of claim 34 wherein the second sensors are light intensity sensors.

1 47. The sensor unit of claim 34 wherein the second sensors are chemical
2 sensors.

1 48. The sensor unit of claim 34 wherein the second sensors are surface
2 tension sensors.

1 49. The sensor unit of claim 34 wherein the second sensors are surface stress
2 sensors.

1 50. The sensor unit of claim 34 wherein the second sensors are surface
2 profile sensors.